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AUTHOR Langer, Philip
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ABSTRACT

This study deals with three critical decision areas in individualizing instruction: (1) the decision whether or not to use commercially available materials; (2) the programmatic impact assigned to cognitive and affective consequences; and (3) the extent of formal structuring. Using a six-year research and development cycle for the development of an individualized, modularized, multimedia course as the data base, the conclusions are that trade-offs are inevitable, but a reasonably valid decision matrix can be generated. Specifically, commercial materials can be used provided they are incorporated within a tightly structured module format; affective outcomes are a source of legitimate concern; and a carefully detailed set of management procedures which provide for student choice and immediate feedback seems most successful. The data base program on which the research was based consisted of text, film, and lecture/tape modules covering 14 content areas in educational and adolescent psychology. (Author/DS)

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CRITICAL DECISION AREAS IN INSTRUCTIONAL DEVELOPMENT

Philip Langer

School of Ecuation

University of Colorado

Boulder, CO 80309

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Over the last six years we have chronicled the agony and ecstacy of our R & D effort for an individualized/ modularized multimedia educational/adolescent psychology program (Langer, 1973; Langer, 1974; Langer, 1975; Langer, 1976; Langer, 1977a). If nothing else, the course title should give you some idea of the magnitude of our problems.

To compound the situation, we have been beset almost from the beginning with very limited resources. We say "almost from the beginning", because in our first year we had more than adequate NSF support. Unfortunately as the state of the art advanced, the state of the funds decreased rapidly. The logic of this kind of support escapes us (Langer, 1977b); nevertheless, the program exists. Using Robin's (1976) criteria for personalized instruction, we lack only the proctor component.

It is our intent in this paper to analyze several critical decision areas, encountered during the course of our developmental efforts. In our estimation, resolution of these problems is significant not only in terms of immediate programmatic consequences, but also the future thrust of the system. We should hasten to add that our results are based on proximal, that is, systems-specific research, rather than distal, or research of universal applicability (VanMondfrans et al.,

1977). However, our results do replicate those found elsewhere (Robin, 1976), and it would appear there is a rather high order of generalizability in our assumptions.

The critical areas selected for this discussion include: (1) whether or not to use commercially available materials; (2) the programmatic resources assigned to cognitive and affective consequences, and (3) the extent to which the program should be formally structured. After six years, our conclusions are that such decisions involve trade-offs, and it is possible to estimate the probable consequences.

Let me describe the course as it now stands, along with the magnitude of some previous changes, and then analyze our decision making processes.

The current program consists of text, film and lecture/tape modules covering 14 content areas in educational and adolescent psychology. There are 52 text modules. Each text module consists of a management sequence, a set of behavioral objectives, study guide questions matched to the readings, and objective type quizzes called Learning Checks in our system. We should point out that we started our first year with 27 text modules, eight content areas, and over 80 text titles (Langer, 1973). After seven years our system includes, besides the 52 text modules, and 14 content areas, only a dozen text titles (Langer, 1977). In between we have had

as many as 97 modules, in 12 content areas, with about 50 texts (Langer, 1974). Things have never stood pat.

Our film modules, of which there are 16, were introduced after the third year (Langer, 1976). Film modules consist of a management sequence, a set of behavioral objectives, a synopsis of the film content and background materials (where relevant), study guide questions based on the content and background, and Learning Checks. All the films are Psychology Today products (CRM-McGraw Hill).

The eight lecture/tapes, like the films, were introduced in the third year. The tapes themselves are based on some "live" lectures given the second year (Langer, 1975). Tape modules include a synopsis, a topically-keyed outline, and Learning Checks.

We should hasten to add that in spite of all these curriculum changes, student achievement has been consistently high.

Actually, the very first critical decision we made dealt with the issue of whether or not to use commercially available materials. Based on our past experiences at the Far West Laboratory for Educational Research and Development (Borg et al., 1970) we came to the conclusions that curriculum

materials, developed from scratch, usually stay on-line a lot longer than commercial products. On the other hand, if we opted for commercial products, we could insure at least contemporaneity, and leave considerably more time for subsequent management operations. However, it is also equally true that materials developed specifically for a program are generally better suited for unique program needs. Hence, we could not delude ourselves into thinking that we would be controlling much more than student pacing with commercial products.

It finally came down to the extensiveness of our program content. To try and develop both the areas of educational and adolescent psychology just about excluded any good R & D effort in curriculum development, unless massive support could be obtained and maintained. This, we discovered, was like believing in Santa Claus.

Although we opted for commercial products, we did try and meet as many student needs as possible. For example, we have (1) incorporated a wide range of theoretical positions in our materials, and (2) have sought to overcome the conceptual weaknesses inherent in most texts (Markle, 1974) by our module structuring. Also, we have provided for a great deal of student choice regarding module selection within a given content area (Langer, 1977).

In summary, we have tried to avoid some of the pitfalls inherent in the use of commercial materials. While we recognize that we are controlling student pacing primarily, we do feel other student needs have been dealt with to some extent. The management operations, however, have become increasingly more complex. In our estimation, the ability to meet necessary design changes in the system and/or maintain content as current as possible, outweigh gains more closely related to developing one's own materials.

The second decision area, involving affective-cognitive balance, was thrust on us during the first few months the program was in operation. We don't know how many of you have ever tried to build such a system, but there is an old adage in R & D that if anything can go wrong, it will. In our case, we concentrated so heavily on the cognitive aspects that we ignored other areas, especially the social-interpersonal relationships. Our students informed us in no uncertain terms of our deficiencies. Frequent complaints reflected lack of personal contact, rote memorization, etc. In short order we instituted discussion groups, optional lectures, etc. (Langer, 1973; Langer, 1974). One can see that we were forced to do some drastic reallocations in program resources. However, the volume of complaints went down sharply, making our efforts worthwhile. Interestingly enough, others (e.g., Sheldon et al., 1975) have found the same problems and have instituted similar types of remediation.

Other program strategies have dealt with levels of test anxiety associated with a system maintaining a high frequency of testing. We have manipulated our test criteria so that while student success is assured on subsequent work, there is little incentive to cheat (Langer, 1973; Langer, 1975; Davis et al., 1974; Anderson and Faust, 1973). The previously mentioned tactic of student options (Langer, 1977) has also helped the affective climate.

Our conclusion is that affective outcomes are an area of critical concern. We spend a lot of time in this area. But our problems are not unique. For example, PSI courses have been plagued with higher withdrawal rates than traditional courses. While the differences in rate may not be catastrophic they may be symptomatic of deeper problems. However, research in this area appears to be minimal (Robin, 1976). Our general conclusion is that affective objectives should be legitimatized in individualized instruction, and system operations developed to meet these. Moreover, the strategies should be inherent in the system, and not depend on personal effectiveness of staff.

The third area, that of management operations, overlaps to some extent with the previous two. There are a number of decisions we have made that are worth exploring. Generally, the daily management procedures have become increasingly more sophisticated and tighter during the six year R & D

period (Langer, 1976; Langer, 1977). First of all, the management operations for each specific module are now included in a bound Student Manual (Langer, 1976). The content materials are in the Library Reserve Reading room. The course structure, down to the modules, is detailed and tight. Student reaction is uniformally excellent (Langer, 1977).

In addition, we have a weekly computer printout that cumulatively lists the activities for each student. Students can see at a glance not only their progress with respect to our deadlines, but also how well they are doing in relation to peers. The latter is sometimes a potent incentive. The printout also includes weekly and cumulative test evaluation data for our use. Next, we provide immediate and direct feedback to students. Learning Checks are scored as soon as possible with the student having the right to challenge our answer and/or explain his own. While there is still a great deal of controversy over the benefits of immediate feedback (e.g. Anderson and Faust, 1973; Kulhavy, 1977), our approach has worked extremely well. When students do not succeed, which is rather infrequently in our program, they tend to blame themselves rather than the system. Usually they go back to their study guides and rethink their learning strategies.

Finally, our Evaluation Center is always open and students are encouraged to talk over problems. This has

helped in our ability to respond quickly to problems before they become full-blown.

In short, we have established to our satisfaction that precise and open management operations, coupled with direct and immediate feedback, significantly improve our system's chances for success. Our findings are that when students feel that program operations are tight, but subject to subsequent change, we have the best of all possible worlds.

In summary, we have described three basic areas of concern: (1) use of commercially developed curriculum materials; (2) balancing cognitive and affective outcomes, and (3) management operations. Our decisions were to (1) use commercial materials, tightly structured, but with provisions for student options; (2) utilize significant resources for improving affective outcomes, and (3) develop a precise and open set of management procedures which include explicit and immediate feedback. We feel that the results justify our decisions.

REFERENCES

Anderson, R.C. & Faust, G.W. Educational psychology: The science of instruction and learning. New York: Dodd, Mead, 1973.

Borg, W., Kelly, M. Langer, P., & Gall, M. The Minicourse: A microteaching approach to education. New York: Macmillan and Co., 1970.

Davis, R.H., Alexander, L.T., & Yelom, S.L. Learning system design: An approach to the improvement of instruction. New York: McGraw Hill, 1974.

Kulhavy, R.W. Feedback in written instruction. Review of Educational Research, 1977, 47, 211-232.

Langer, P. Development and first phase of a modularized/individualized educational psychology program. JSAS Catalog of Selected Documents in Psychology, 1973, 3, 98. (Ms. No. 437)

Langer, P. Phase II: A modularized/individualized secondary educational psychology program. JSAS Catalog of Selected Documents in Psychology, 1974, 4, 135. (Ms. No. 790)

Langer, P. Phase III: A modularized/individualized educational psychology course. JSAS Catalog of Selected Documents in Psychology, 1975, 5, 344. (Ms. No. 1131)

Langer, P. Phase IV: A modularized/individualized multimedia educational/adolescent psychology course. JSAS Catalog of Selected Documents in Psychology, 1976, 6, 76. (Ms. No. 1303)

Langer, P. Student manual for educational and adolescent psychology. (2nd Ed.) Boulder, Colorado: University of Colorado, 1976.

Langer, P. Phase V: Stabilization and general analyses of a modularized/individualized multimedia educational/adolescent psychology course. JSAS Catalog of Selected Documents in Psychology, 1977(a), 7. (Ms. No. 1602)

Langer, P. Innovating undergraduate educational psychology: A somewhat different set of problems. Paper presented at the meeting of the American Psychological Association, San Francisco, August, 1977(b)

Markle, S.M. They teach concepts, don't they? Educational Researcher, 1975, 4, 3-9.

Robin, A.L. Behavioral instruction in the college classroom. Review of Educational Research, 1976, 46, 313-354.

Sheldon, J., Sherman, J.A., Wolf, M.M., Minken, B.L., & Minken, N. "Hello teacher...." or optional lectures, discussions with instructors, and assigned proctors: Their effects on students ratings in a PSI course. In J. Johnston & G.W. O'Neil (Eds.) Research and technology in college and university teaching. Atlanta, GA: Georgia State University Urban Life Center, 1975.

VanMondfrans, A.P., Black, H.R., Keysor, R.E.,Olsen, J.B., Shelley, M.F., and William, D.D. Methods of inquiry in educational psychology. In D.J. Treffinger, J.K. Davis, & R.E. Ripple (Eds.) Handbook on teaching of educational psychology. New York: Academic Press, 1977.